

NOTE ON A LEUCITE-BASALT FROM CENTRAL NEW  
SOUTH WALES.

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The object of this note is to record the existence and discovery of a Leucite-basalt—a rock hitherto unknown in Australia, and, by giving publicity to the fact, to elicit some information as to its existence in other parts of the colonies.

Alexander von Humbolt is responsible for the opinion which until lately was generally received, that leucite was a mineral occurring only in Europe. Up to the present it has not been found very widely distributed. It is found in the recent Vesuvian lavas, in the Eifel near Wehr, on the Laacher See, the Forstberg, in the Thüringerwald, Rohön Mountains, Olbrück, and in other localities in Saxony and Bohemia, as well as at Capo di Bove, and Frascati, near Rome. In 1875 Zirkel announced (*Neu. Jahrb. f. Mineral.* 1875) that leucite was a constituent of a basaltic rock in the island called Bawean, north of Java. This was the first and, as far as I can find, the only example of an Asiatic leucite-basalt. In 1876 Zirkel's "Microscopical Petrography" was published, and in that work (p. 259), the existence of a leucite-rock from the Wyoming Territory of North America is recorded.

More than two years ago I examined a basaltic hill a few miles to the west of the railway line at Byerock, County of Cowper, and on cutting some thin slices saw that the felspar I had expected to find in the rock, was replaced by leucite. Afterwards from information I received, I had reason to believe that the hill known as El Capitan, situated about 30 miles to the north-east of Cobar, in the County of Canbelego, consisted of basalt. Recently I

shared my views on the matter with Mr. W. Anderson, and decided to examine the locality, when we were rewarded by discovering a patch of some five square miles of a leucite-basalt similar in every respect to the rock I found at Byerock. At the latter place the basalt rests in part on a silurian slate and an intrusive granite, while near Cobar the underlying rocks are silurian slates and conglomerates, and a silicified tertiary drift.

The texture of the leucite-rock varies somewhat in different localities. Macroscopically there is nothing in the external appearance of the rock to indicate its richness in leucite. It occurs as a dark fine-grained rock with patches of a reddish-brown mineral—probably mica. The dark, almost black colour is due to the great abundance of magnetite the rock contains. When a thin slice is examined the leucite is found to be the dominant ingredient in the mass. It is distributed in closely packed, rounded or roughly octagonal grains between which no vitreous matter can be detected. The leucite is more abundant than in any of the typical leucite-basalts figured by Fouque and Michel Levy\*, or Rosenbusch†, and almost as plentiful as in the American rocks already referred to‡. In a few of the slices I have detected the well-known and characteristic radial and concentric interpositions so common in the Vesuvian leucites.

As far as is known at present leucite rocks occur only among tertiary and recent volcanic productions. The Australian example proves no exception, for both Byerock and El Capitan basalts belong certainly to tertiary, and to my mind latter tertiary times.

For detailed microscopic examination I have sent some slices to our eminent Australian petrologist, Mr. A. W. Howitt, of Sale, Gippsland.

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\* *Mineralogie Micrographique*. Planches 48, 49, 50, and 51.

† *Micro. Phys. wichtigen Mineralien*, Taf. 14. (Zweite Auflage).

‡ *Micro. Petrography*, by F. Zirkel—(Geol. of Fortieth Parallel).